REPORT OF POST BASELINE SITUATIONAL ANALYSIS OF BLOOD SAFETY IN MALAWI

2015

MALAWI BLOOD TRANSFUSION SERVICE
P.O BOX 2681
BLANTYRE

04 Jan 2017

TABLE OF CONTENTS

LIST OF ACRONYMS

AHG	Anti-Human Globulin
ARVs	Antiretroviral drugs
CHAM	Christian Health Association of Malawi
DAT	Direct Antiglobulin Test
DHO	District Health Officer
EMLS	Essential Medical Laboratory Services
FFP	Fresh Frozen Plasma
GDP	Gross Domestic Product
GoM	Government of Malawi
HDI	Human Development Index
Hep B	Hepatitis B
Hep C	Hepatitis C
HIV	Human Immune Deficiency Virus
HTC	Hospital Transfusion Committee
HMIS	Health Management Information system
IAT	Indirect Antiglobulin Test
IV	Intravenous
MBTS	Malawi Blood Transfusion Service
MoH	Ministry of Health
PEP	Post Exposure Prophylaxis
SOP	Standard Operating Procedure
WHO	World Health Organisation

EXECUTIVE SUMMARY

Efforts to improve blood safety in sub-Saharan Africa started in the last century and are still ongoing. Unsafe blood is known to transmit HIV and other infections. Safe blood is important in the prevention of HIV and in achieving Millenium Development Goals (MDGs) 4 and 5. In accordance with international guidelines, the Government of Malawi established the Malawi Blood Transfusion Service (MBTS) as a nationally coordinated blood service with a mandate to ensure the safety and adequacy of blood and blood products for the country. Since its establishment, the MBTS has tremendously improved not only the availability of safe blood and blood products but also the practice of blood transfusion. It has established itself as a model service in Africa and its reputation goes beyond the Continent.

In an effort to improve the monitoring and evaluation of blood safety programming, the MBTS has carried out situational analysis surveys on blood safety in the Country. The first baseline survey was carried out in 2007 and the post-baseline survey was carried out in 2016 to assess blood safety issues for 2015. A data collection tool was developed and discussed with stakeholders. Experienced laboratory technicians, who had been trained to use the tool, collected data from all hospitals including the private hospitals that carried out transfusions in 2015. Quantitative and qualitative data was collected over a period of 30 days in September 2015. Data analysis was done by a team of statistical consultants using SPSS version and STATA version 20.

This was a census survey. All 87 hospitals carrying out transfusion in 2015 were surveyed **.** These hospitals were owned by government and Christian Health Association of Malawi (CHAM), and Private individulas , in all three regions of the country. The biggest challenge facing blood safety in the Country is the low number of voluntary non-remunerated blood donors. Other challenges include low staffing levels in the laboratory; unsatisfactory quality systems at hospital level, in particular the lack of a sustainable maintenance program for hospital equipment; weak systems for ensuring an uninterrupted supply chain for reagents and supplies; non-availability of crucial blood cold chain equipment, widespread use of inappropriate cross-match techniques; lack of essential stationery for blood transfusion safety and the absence of records on blood transfusion reactions. Record keeping and data management in most hospitals is poor. There is some improvement in the measures to ensure the safety of laboratory staff and other people who enter the laboratory. Several guidelines are now in place at national level to enhance blood safety in the Country. The Malawi government , through the Ministry of Health has produced the following documents; National Blood Policy , Guidelines on the clinical use of blood and blood products.Furthermore, it has reviewed and published the Guidelines on the practice of blood transfusions in Malawi. However , there is still no legislation to regulate blood transfusions related procedures .

Recommendations have been made to the Ministry of Health to continue supporting the current organisation of blood services in the Country and to ensure that the regulatory environment for blood transfusion is strengthened;

to zonal coordinators to use the findings of this survey to monitor their zone's progress in achieving safe blood transfusion practices; to hospital management teams to ensure an enabling environment for the practice of modern transfusion medicine and to the MBTS to use its expertise to work with the Ministry of Health to enhance blood safety in the country and to assist individual hospitals to improve.

1.0 INTRODUCTION

It has long been realized that blood is an important component of every country's health delivery system. Blood is used in all clinical disciplines and has been known to save lives. Availability of adequate safe blood supplies is important in achieving Millenium Development Goals 4 and 5 which deal with reducing maternal and child mortality. However, if unsafe, blood has been known to spread serious infections such as HIV, hepatitis and others. However, this is not the only risk of transfusion therapy. Weak systems in the blood transfusion chain are responsible for some serious immune and non-immune transfusion reactions some of which are fatal. It is important that the efforts to improve blood safety should not only be restricted to the availability of adequate quantities of safe blood and blood products but should also target systems to improve the transfusion process. This is what is known as blood transfusion safety.

There have been many efforts made, towards the end of the last century and at the beginning of this century, to improve the availability of safe blood supplies in Sub-Saharan Africa. Many international bodies such as the World Health Organisation (WHO); the International Federation of the Red Cross and Red Crescent Societies (IFRCRCS) and the International Society of Blood Transfusion (ISBT) have played a key role in providing guidelines on blood safety and on transfusion safety. In line with these guidelines, the Malawi Government, through the Ministry of Health, established the Malawi Blood Transfusion Service (MBTS) to ensure the safety of blood transfusions in the Country. The MBTS started its operations in 2004. It is a centralized service directly responsible for the provision of adequate safe blood supplies. Unlike in other countries, the MBTS does not store, cross-match nor issue blood at hospital level. This is carried out by personnel of individual hospitals. As such it is important that conditions at transfusing hospitals are up to the standard required to achieve safe blood transfusions. These conditions include infrastructure, equipment, knowledge and skills level of hospital personnel, quality systems and a robust reagent and supply management system.

Working with the Ministry of Health (MoH) and its other partners such as the Centres of Disease Control and Prevention and the National AIDS Commission, the MBTS has undertaken to improve the conditions that exist in hospitals across the Country. Many improvements have taken place since the establishment of the MBTS. However, it has always not been possible to make accurate estimates of proportions improved against those still operating under less suitable conditions for the practice of modern transfusion medicine. Furthermore, it is known that having adequate amounts of safe blood is an important component of blood safety. Inadequate amounts force doctors to

use any blood that is available. Accurately estimating the country's blood needs is an important step towards achieving blood safety.

However, generic formulae contained in international guidelines on estimating the blood needs of a country have been found wanting for some developing countries including Malawi.
Blood needs depend on the country's level of health services provided. Countries that carry out heart and orthopeadic surgeries need more blood than those that do not. These formulae have tended to grossly overestimate the blood needs of some countries including Malawi.

The MBTS undertook to carry out this post baseline situational analysis on blood safety in order to describe the national blood safety situation and further estimate the blood needs for the country. The 2007 baseline survey estimated the country's annual blood needs to be 80000. This post-baseline survey help in identify areas of improvement since 2007 ; areas of greatest need; which will help in the planning of strategies to address the identified needs and provide updated data for monitoring and evaluation and re-programming of strategies to achieve national blood transfusion safety.

2.0 A SUMMARY OF THE COUNTRY PROFILE

Malawi is a small, land locked country in Southern Africa with a total area of 118, 484 square kilometres of which 94,246 square kilometres is land area. Its neighbours are Tanzania in the north and northeast , Mozambique in the east, south and southwest while Zambia lies to its west and northwest. It has a population of 13.1 million (2008 Census) of which 85% live in rural areas. The economy is agriculture based with tobacco as the main cash crop. The other cash crops are tea, sugar and cotton. It is a low HDI country with a GNP of US$170 per annum (1995). The main health problems include Malaria, TB, HIV-AIDS and shortage of health personnel. HIV prevalence is 12.2%. Hepatitis B is endemic. There is no reliable data on the prevalence of Hepatitis B and C. The population of Malawi is young with a life expectancy of 40 years. The Government of Malawi (GoM) provides about 63% of health services. 36% and 1% of health services are provided by religious based organisations and private hospitals respectively.

Malawi is a democratic country with three administrative regions: Northern, Central and Southern regions. The Map of Malawi is shown in Figure 1 below.

Figure 1: The Map of Malawi

3.0 THE NATIONAL BLOOD TRANSFUSION SERVICE

The Malawi Blood Transfusion Service was established by the Government of Malawi through the Ministry of Health as an independent Trust responsible for the provision of safe and adequate supplies of blood and blood products for all patients in all authorised hospitals in the Country. It is the Country's

national blood service. It started operations in 2004. The Minister of Health appoints a Board of Trustees for the MBTS. The Board in turn appoints management of the MBTS and overseers the operations of the MBTS. The headquarters of the MBTS are in Blantyre, Southern Malawi, with regional centres in Lilongwe, Mzuzu and a depot in Balaka. All regional centres are responsible for blood collection; component preparation, storage and distribution of blood components. All testing is centralized and is carried out at the headquarters in Blantyre.
The MBTS has a public relations department, responsible for the recruitment and retention of voluntary non-remunerated blood donors; a blood donor department responsible for blood collections and the laboratory department which is responsible for all testing and component preparation. There is also a finance and administration department.

The hospitals, which carry out transfusions, collect blood products from the MBTS' regional centres and depot. They store, cross-match and issue the blood components to individual patients. In line with international practice, the MBTS collects blood only from voluntary non-remunerated blood donors; encourages regular blood donation, screens all donated blood for HIV, Hepatitis B and C, syphilis and malaria. The MBTS also tests for the major red cell antigens. It produces and supplies the following blood components: whole blood, red cell concentrates, platelet concentrates, fresh frozen plasma and cryoprecipitate.

The MBTS is currently not meeting all the country's blood needs. Some hospitals collect blood from patients' relatives to supplement the blood supplies from MBTS. Since its establishment, the MBTS has intensified training for all health personnel and undergraduate students. It has rehabilitated some hospital blood banks and provided them with essential blood bank equipment. The MBTS has also established a national quality assessment scheme in immunohaematology. The MBTS also promotes the appropriate clinical use of blood and blood products through training and promotion of the formation of Hospital Transfusion Committees (HTCs). The MBTS has registered many successes and is recognised by the WHO as a model service for resource restricted economies.

4.0 BLOOD TRANSFUSION POLICY, LEGISLATION AND GUIDELINES

The Government of Malawi adopted internationally accepted policies and guidelines in the conduct of blood transfusion in the Country through the establishment of the MBTS and the promotion of modern transfusion medicine practices across the Country. The following documents have been published; National Blood Policy, Guidelines on the clinical Use of Blood and Blood Products. The government has also revised Guidelines on the practice of blood transfusion in Malawi which were first published in 1997. However ,there is currently no legislation on blood transfusion. The absence of the regulation weakens the regulatory environment and weakens efforts to improve blood transfusion safety. There is now a system for passive collection of blood safety data at national level but the system needs strengthening.

5.0 GOAL OF THE SITUATIONAL ANALYSIS ON BLOOD SAFETY IN THE COUNTRY.

The survey was conducted to assess the blood safety situation in the country as of 2015 in order to establish the post-baseline data for blood safety indicators
at national level. This will be used for planning, monitoring and evaluation and reprogramming of interventions for future improvement of blood transfusion safety.

5.1 Specific Objectives

5.1.1 To describe the situation as regards blood safety.
5.1.2 To estimate the blood needs of the country
5.1.3 To assess quality assurance that exists in hospital blood banks
5.1.4 To assess the infrastructure and availability of essential equipment and reagents for blood transfusion
5.1.5 To raise awareness of the existing gaps and spur efforts to address those gaps

6 METHODOLOGY

6.1 STUDY AREA

The survey was carried out in all districts (except Likoma for logistical reasons) across the country in order to obtain complete data for the country. There are four levels of health facilities in Malawi. namely Central Hospitals which provide mainly tertiary and specialized health services; district hospitals and mission hospitals which provide mainly secondary health services; community hospitals which provide mainly primary health services with some secondary health services and the health centres which provide primary health services only. All health facilities in Malawi, provide some primary health care. All hospitals except health centres have the potential to carry out blood transfusions. District and Central Hospitals are owned by the Government. Mission hospitals are owned by the various religious institutions in the country through their umbrella organization, CHAM. Both the government and CHAM own community hospitals.

6.2 STUDY TARGET

All hospitals that carry out blood transfusions were targeted. These include Central Hospitals, district hospitals, mission hospitals, private hospitals and community hospitals. The 2007 situation analysis did not include private hospitals. Health Centres were not targeted as they have no capacity to carry out blood transfusions. District and Community hospitals that had no capacity to carry out blood transfusions in 2015 were also not targeted. These hospitals lacked capacity mainly in terms of qualified laboratory personnel and/or storage facilities for blood.

6.3 STUDY DESIGN

A cross-sectional and retrospective survey was carried out in all hospitals in the country over a month.

6.4 SELECTION CRITERIA

Hospitals that were carrying out transfusions in 2015 and accessed by road.

6.5 EXCLUSION CRITERIA

Not carrying out transfusion in 2015.

6.6 PILOT STUDY

The pilot study was conducted in four hospitals of different sizes in the Southern Region to assess the data collection tool for accuracy, time taken to complete the tool, understanding and responses of the respondents as well as survey logistics. Lessons learnt were used to improve the planning of the survey.

6.7 DATA COLLECTION

A data collection used in 2007 situation analysis was used with minor addition of variables .The data collection tool in 2007 was developed, discussed with stakeholders from Essential Medical Laboratory Services (EMLS), Ministry of Health (MoH) Headquarters and 5 Health Zones. Experienced laboratory technicians, who had been trained to administer the data collection tool, were sent out to all hospitals across the Country. The exercise was carried out over a period of 30 days in September 2015. The data collection tool collected mainly quantitative data with some qualitative data.

6.8 DATA MANAGEMENT

SPPS version 20 and STATA version 13 was used . Data analysis was done by a team of independent statistical consultants.

6.9 STUDY LIMITATIONS

The responses were not complete as some hospitals could not trace data from their records. This is due to poor record keeping in these hospitals. Furthermore , blood needs was reported which could not be verified.

7.0 RESULTS

A total of 87 hospitals were surveyed. This was 33 (61%) more hospitals than those that were surveyed in 2007. These comprise 4 (5%) Central Hospitals (tertiary hospital), 30(34%) district hospitals , 37 (43%) Mission Hospitals , 15 (17%) private hospitals and 1 (1%) Malawi Defence Force Hospital. By region, there were 32 (37%) in the southern region, 41(47%) in the central region and 14 (16%) in the northern region. This is summarized in table 1 below.

Table : SURVEYED HOSPITALS BY OWNERSHIP in 2015 (N= 87)

HOSPITAL OWNERSHIP	NUMBER	Percentage
CHAM	37	43%
Government	34	39%
Private	15	17%
Other	1	1%

Table : SURVEYED HOSPITALS BY REGION in 2015 (N= 87)

HOSPITAL OWNERSHIP	NUMBER	Percentage
Central	41	47%
Northern	14	16%
Southern	32	37%

Table : SURVEYED HOSPITALS BY TYPE in 2015 (N= 87)

HOSPITAL OWNERSHIP	NUMBER	Percentage
Central	4	4%
Community/Rural	33	38%
District	30	35%
Other	20	23%

Table : SURVEYED HOSPITALS BY TYPE, REGION AND OWNERSHIP in 2007

Surveyed Hospitals by Type			Surveyed Hospitals by Region			Surveyed Hospitals by Ownership	
Central	District/Mission	Community	Southern	Central	Northern	Govt	CHAM
4 (7%)	42 (78%)	8 (15%)	22 (41%)	21 (39%)	11 (20%)	29 (54%)	25 (46%)
Total		**54 (100%)**	**Total**		**54 (100%)**	**Total 54 (100%)**	

7.1 INFRASTRUCTURE

76 (87%) of the hospitals have adequate space for blood bank work. 9 hospitals indicated that they did not have enough space. 5 of 9 (56%) which did not have adequate space were government. All the private hospitals indicated to have adequate space. This is an improvement from the previous survey which showed that 43 (80%) hospitals out of the 54 surveyed had adequate space. Inadequate space make the practice of safe transfusions difficult. As such small laboratories need to be extended and rehabilitated. 94% of hospitals had a sink with running water, 97% had adequate lighting, 99 % had good ventilation and 100 % had a working bench with adequate height . This is consistent with the 2007 baseline findings which indicated that 95% or more hospitals had a sink with running water, a working bench, adequate lighting and ventilation. This means that most hospital management teams maintain their laboratories well. This is commendable and should be encouraged. The small proportion of hospitals in poor state of repair, are urged to improve.

7.2 EQUIPMENT

86(99%) of the hospitals have a fridge for storage of red cell products. One hospital did not indicate. 57 (66%) use recommended blood bank and 28(32%) use domestic refridgerators 2 hospitals did not indicate the type of fridge they were using.

Those that had recommended blood bank refridgerators , 23(40%) CHAM , 29(51%) Government hospital, 4 (7%) Pvt and 1(2%) other.

Out of 28(32%) that uses domestic refridgerators , 13(46%) were CHAM hospitals , 5 (18%) were government and 10(36%) were private hospitals.

In the 2007 survey , it was found that 42 (78%) used the recommended blood bank refrigerators and 12 (22%) use household fridges. 75% of those using household fridges were CHAM hospitals.

All efforts must be made to ensure that all hospitals have proper blood bank fridges.

4(5%) of the hospitals have a proper deep freezer for storage of plasma products such as Fresh Frozen Plasma (FFP) and cryoprecipitate. Some of the remaining 95% use freezer compartments of household fridges, whose running temperature, has never been measured by the blood bank personnel and are not monitored. It is known that the running temperature for these freezer compartments rarely goes below -20°C. This is higher that the recommended -25°c or below at which frozen blood products must be stored. It is therefore evident that there is a major problem with the storage of plasma at hospital level, nationally.

Almost all hospitals have on their inventories, all the necessary pieces of equipment for the blood bank. They are in various states of repair and usable condition. 60 (69%) of hospitals have working water baths, 76(88%) have containers for storing normal saline, 66(77%) of hospitals have some working thermometers; 25 (29%) have the recommended maximum and minimum thermometers. This is an improvement as the 2007 baseline survey indicated that 10 (19%) had the recommended maximum and minimum thermometers).

79 (91%) have Blood Cold Chain Boxes, 86 (100%) have test tube racks, and 75 (87%) microscopes. 4(5%) of the hospitals have platelet agitators, this represented 4(100%) of all central hospitals having platelet agitators. In contrast to 2007 survey that found that all Central Hospitals surveyed did not have platelet agitators. No district , mission and community hospitals reported to have platelet agitators on their inventories.

It is encouraging to note that most of the necessary basic blood bank pieces of equipment are on the hospitals' inventories. This shows that the importance of these pieces of equipment to properly cross-match and prepare blood for transfusion is well understood. However, sustained usage is hampered by non-maintenance and non-replacement of worn out items. Hospital management teams need to support their laboratories to enable them improve the safety of blood transfusions carried out in their hospitals..

Back up power supply for hospital blood banks is available in 71 (83%) hospitals and one CHAM hospital reported to have solar power back up. Of the 15 hospitals without back up power, 10(67%) are owned by Government ,4 (27%)are owned by CHAM and 2 (13%) owned by government. Although the number of hospital connected to back up power remains the same for CHAM in 2007 , the 2015 survey showed that some more hospitals were not connected to power than in 2007.

It is encouraging to note that most hospitals have their blood banks connected to the back up power supply. Those hospitals without back up power, are urged to have back up power supply installed. This is important not only for blood safety but in other areas of laboratory work.

Table : Availability of essential pieces of blood bank equipment in Hospitals in 2015

Item	Number	Proportion (%)
Adequate space for blood bank work	76	87%
Blood bank fridge	57	66%
Blood bank deep freezer	4	5%
Platelet agitator	4	5%
Water bath	60	69%
Serology centrifuge	78	90%
Any thermometer	66	76%
Maximum and Minimum thermometers	25	29%
Blood Cold chain boxes	79	91%
Back Up power source	71	82%

Table : Availability of essential pieces of blood bank equipment in 2007

Item	Proportion of Hospitals with (%)
Adequate space for blood bank work	80
Blood bank fridge	78
Blood bank deep freezer	10
Platelet agitator	0
Water bath	60
Serology centrifuge	93
Any thermometer	75
Maximum and Minimum thermometers	19
Blood Cold chain boxes	87
Back Up power source	87

7.3 Quality Systems

7.3.1 Personnel

Range of 1 lab personel to 14 personel. Average of 3 laboratory personel. All hospitals have at least one qualified laboratory member of staff (Laboratory technician or assistant). 12 (13%) of hospitals had atleast 2 laboratory personel personnel working in the blood bank. This is an improvement as the 2007 baseline study indicated that all hospitals (except central hospitals) had no staff members who work, full time, in the blood bank. Up to 75 (86%) of the hospitals are manned by only 1 qualified staff member. This gross

understaffing has an effect on the quality of laboratory services and on data management.

Table : Staffing levels in 2015

Item	Proportion of hospitals with (%)
Has at least one qualified laboratory staff member	100
Have 1 qualified staff member only	75
Have more than 3 qualified lab personnel for the whole laboratory	12

Table : Staffing levels in 2007

Item	Proportion of hospitals with (%)
Has at least one qualified laboratory staff member	100
Have 1 qualified staff member only	24
Have more than 3 qualified lab personnel for the whole laboratory	11
Hospitals with staff members allocated for solely blood bank work	6

7.3.2 Temperature Monitoring

Evidence of some temperature monitoring was seen in 64(74%) of the hospitals. 22 (36%) of the hospitals did not monitor the storage temperature of their blood at all. All of these hospitals are manned by qualified laboratory personnel. However, of the 22 hospitals which did not show evidence of temperature monitoring , 9 (36%) of them are owned by CHAM, 7(32%) owned by government and 4(18%) owned by government.
It is unclear why the hospitals do not monitor the storage conditions for blood.
25 (30%) of hospitals had minimum and maximum thermometers and 61(75%) did not have. Of those hospitals which did not have the minimum and maximum thermometers , 25(41%) were owned by CHAM , 20(33%) were owned by government and 13 (21%) owned by private hospitals. 2(50%) of central hospitals did not have minimum and maximum thermometers. As such hospital blood bank personnel are unable to know the operating range of their storage facilities. They miss early warning signs of malfunctioning settings which would enable the personnel to correct them in time. However, the number of hospitals with minimum and maximum thermometer has improved because the 2007 survey indicated that only 11(20%) of hospitals had minimum and maximum thermometrs.

7.3.3 Storage

Blood is mostly being kept according to recommendations both in blood bank refridgerators with atleast 81% of the hospitals, storing the blood in an organised and systematic manner according to blood groups , crossmatch status and and expiry dates. 16 (28%) of hospitals with blood bank refridgerators were noted to have blood units cramped together. For those hospitals using house hold refridgerators , atleast 70% of hospitals were observed to systematically arrange blood according to blood groups , expiry dates , crossmatch and units packed at the middle of the fridge. 6(21%) of hospitals were observed to have cramped blood units. It is important that all hospitals store blood in compartmentalized trays to allow for air circulation.

7.3.4 Reagents

On average 61(87 %) of hospitals visited had in stock all the IgM antisera. All were within usable period during the time of visit. 37 (48%) of the hospitals had antihuman globulin (AHG) for indirect antiglobulin testing (IAT) cross match. However, the AHG was in stock and not expired in 22 (25%) of the hospitals , 19 (22%) had expired and 46 (53%) of hospitals did not have the AHG at all. This means that only 22 (25%) of the hospitals were capable of using an IAT cross match to issue blood to patients. This confirms the suspicions of many that most cross matches in the country are carried out using saline cross matches only and not by the recommended IAT.

86 (100%) hospitals of the hospitals have access to distilled water. However, 9 (10%) hospitals are making saline in the laboratory for use in cross-matches as recommended. The rest of the hospitals use normal saline, meant for intravenous (IV) patient use. These IV fluids, ordered from pharmacy are meant for resuscitating patients and are much more costly that normal saline made in the laboratory. This is wasteful. Furthermore, it may lead to shortages of IV fluids with potential serious consequences for patients. It is important that this practice be stopped without delay and that blood bank personnel be encouraged to make their own saline. Labelling of reagents prepared in the laboratory is inadequate with 9(11%) hospitals labelling the reagents properly (Name , expiry date, storage temperature,lot number).However , this was an improvement from the 2007 study where it was found that no hospitals indicated such details. The most common practice in 2015 was to label the name and expiry date. This was observed in 35(42%) of hospitals.

7.3.5 CONSUMABLES

Consumables such as pipettes, test tubes and glass slides were available in atleast 80% of the hospitals. Wash bottles were only available in 58 (67%) of the hospitals.

The fact that they are available in some hospitals and not others is a reflection of the weak systems in maintaining the supply chain for essential reagents and supplies in most hospitals in the Country.

7.3.6 Laboratory Procedures

.

A range of 43 (50%) to 72(82%) hospitals had atleast Standard Operating Procedure (SOP) on different procedures taking place in the laboratory.

61 (70%) of hospitals have an SOP on Grouping , 72 (82%) on cross-matching ; 63 (72) % on Direct Antiglobulin Testing (DAT) and atleast 50 (58%) of the hospitals which do cross match ; have SOPs on confirming RhD (D^u testing), preparation of saline, preparation of sensitized cells, investigation of transfusion reactions or issuing of blood products.

This is an improvement from the 2007 findings which indicated that 32 (60%) of hospitals have an SOP on cross match; 33% on Grouping; 38% on Direct Antiglobulin Testing (DAT) and less than 15% of the hospitals have SOPs on confirming RhD (Du testing), preparation of saline, preparation of sensitized cells, investigation of transfusion reactions or issuing of blood products.

Although there is registered improvement , the systems need to be strengthened and those that completely don't have the SOPs have to be encouraged to develop them. In some of hospitals, technicians carry out procedures from their recollections of what they learnt from college and colleagues. There is no standardization of procedure. This may have an effect on the reliability of results.

7.3.7 Compatibility Testing and Blood Issuing

20 (23%) of the hospitals use the recommended IAT cross-match technique for routine cross-matches. 83 (95.3%) of the hospitals use saline method even for routine cross-matches. Saline only cross-matches are not recommended because they are not capable of detecting all clinically significant antibodies. A study on red cell antigens and antibodies in the Malawi population has shown that 1% of patients in the Country have red cell alloantibodies [4].

7.3.8 Essential Stationery

73 (84%) or more of the hospitals had hospital blood ordering forms, a register for cross-match and issue of blood ,MBTS blood products order forms and Temperature monitoring forms. Other stationery were available in some of hospitals. These include stock cards 51(59%) , Compatibility labels 31(36%) and Transfusion Reaction Investigation Forms 32(37%). Compatibility labels are extremely important in helping ensure that the right blood product is given to the right patient. There are some improvement in the compatibility labels availability in hospital as the 2007 situation analysis found that only 7 (12.7%) hospitals had them. This national lack of compatibility labels needs to be addressed without much delay. It must be appreciated that lack of stationery makes it difficult for already stretched laboratory personnel to ensure quality assurance.

7.3.9 Blood Bank Personnel Safety

Atleast 76 (90%) of the hospitals have a well known system to protect blood bank personnel. These include availability of laboratory protective clothing, heavy duty gloves for laboratory attendants and post-exposure prophylaxis (PEP) system for accidental needlestic injuries. This PEP only protects against HIV. Hepatitis B vaccination was reported by 64 (75%) of the hospitals. This was an improvement from the previous Situation analysis which showed that the Hepatitis B vaccination rate at 28% of the hospitals. There is a high prevalence of Hepatitis B in the country ranging from 8.1 to 36% in certain parts of the Country [6,7]. Hepatitis B is highly infectious. People who handle blood need to be vaccinated against the virus to protect them from acquiring the infection. 59 (69%) of the hospitals have an SOP for handling spills, cleaning and decontamination of working surfaces. The blood bank was a restricted area in 79(92%) of hospitals.
It is important that laboratories are restricted to minimize health hazards to non laboratory hospital personnel and members of the general public. As these people are usually not aware of the hazards in the laboratory, they may not be able to observe all safety procedures and put themselves at risk of chemical injury or of acquiring an infectious marker.

7.3.10 Blood Donor Safety

21(35%) of hospitals that bleed blood donors on their own use a questionnaire to gather the patient's past medical history and risk behaviour. 54(90%) of the hospitals check haemoglobin and 28(46%) check weight.

Blood pressure and pulse rate are only checked in 11(19%) and 14 (23%) of the hospitals respectively. These are carried out by laboratory personnel whose training does not cover these clinical procedures. Intra-donation care is limited as is post donation care with only provision of refreshments. Follow ups are not carried out after donation. A clinical person is readily available in 53 (88%) of hospitals. And this person has had no training in blood donor care. Donor test results are disclosed to potential blood donors in all hospitals that bleed blood donors on their own. This is commendable. This is carried out either by the HTC counsellors or the laboratory technicians themselves.

The results above show some improvement compared to 2007. In 2007 ,Only 2 hospitals used a questionnaire to gather the patient's past medical history and risk behaviour. 80% of the hospitals checked haemoglobin and only 35% checked weight. Furthermore ,Blood pressure and pulse rate were only checked in 15% and 7% of the hospitals respectively. A clinical person is readily available in 12% of hospitals only .

Table : availability of other blood bank essentials in 2015

Item	# of Hospitals	Percentage
Hospitals with unexpired grouping anti-sera		
Anti-A	81	93%
Anti-B	80	92%
Anti-AB	76	87%
Anti-D	77	89%
Hospitals with unexpired AHG	22	25%
Hospitals making own saline	9	10%
Hospitals that adequately label reagents made in the laboratory	9	11%
Hospitals with all the relevant SOPs	0	0%
Hospitals with at least 1 SOP	87	100%
Hospitals using recommended cross-match technique	20	23%
Hospitals with a hospital blood ordering form	73	84%
Hospitals with compatibility labels	31	36%
Hospitals with a system for PEP for HIV	76	87%
Hospitals that have vaccinated personnel against hep B	64	75%

Table : Availability of other blood bank essentials in 2007

Item	Proportion of hospitals with (%)
Hospitals with unexpired grouping anti-sera	90
Hospitals with unexpired AHG	16
Hospitals making own saline	7
Hospitals that adequately label reagents made in the laboratory	0
Hospitals with all the relevant SOPs	0
Hospitals with at least 1 SOP	60
Hospitals using recommended cross-match technique	20
Hospitals with a hospital blood ordering form	85
Hospitals with compatibility labels	7
Hospitals with a system for PEP for HIV	90
Hospitals that have vaccinated personnel against hep B	28

7.4 Screening of Donated Blood for Infectious Markers

60 (100 %) of all hospitals that bleed donors screened for HIV ,Hepatitis B,C and syphilis using rapid tests. 37 (60%) of the hospitals screen the blood for 5 markers of infections , namely , HIV, Hepatitis B , Hepatitis C ,Syphilis and

Malaria . 12 (20%) screened for 3 markers namely HIV , HBsAg and Syphilis and 4 (7%) screened for HIV only. 3 (5%) screened a different combination. 4 hospitals did not indicate any option.

30 (34%) of hospitals experienced stock outs of reagents during 2015. Of the 30 hospitals , 16 (53%) had stock outs of more than 3 months , 8(27%) had stock outs of less than 1 month and 6 (20%) had stock outs of 1to 3 months. The current results show some improvement. The 2007 situation analysis found that 100% of the hospitals that collect blood on their own routinely screened the blood for three infection markers , namely , HIV, Hepatitis B and Syphilis before transfusion . Smaller proportions tested for an additional Hepatitis C (7%) and malaria 27.%. There was no single hospital in 2007 that screened its blood for all five markers as the MBTS (i.e. HIV, Hep B, Syphilis, Hep C and malaria).

Furthermore , in 2007 , 90% of hospitals experienced stock outs of reagents. The stock outs were short-lived: less than one month in 53% of the hospitals, were one to three months in 10% and over three months in 5.4% of the hospitals.

Table 5: Infectious markers screened for in blood for transfusion in 2015

Item	Number of Hospitals	Percentage
Screened blood for transfusion for HIV, Hep B and syphilis	12	20%
Screening for HIV, Hep B, syphilis, Hep C and malaria	37	60%
Screening for HIV only	4	7%
Other combinations including HIV	3	5%
Not indicated	4	8%

Table : Infectious markers screened for in blood for transfusion 2007

Item	Proportion of Hospitals with (%)
Screened blood for transfusion for HIV, Hep B and syphilis	100
Screening blood for HIV, hep B, syphilis and malaria	27
Screening for HIV Hep B, syphilis and hep C	7
Screening for HIV, Hep B, syphilis, Hep C and malaria	0

7.5 ORDERING OF REAGENTS

Technicians are involved in the ordering of reagents in 43 (49%) of the hospitals only.

22 (25%) of hospitals reported to have hospital transfusion committees. 5 (22%) of these committee were reported to meet regularly.
This was an improvement from 2007 as only 1 hospital was reported to have a transfusion committee.
43 (49%) of hospitals reported to have Drug committees , presenting an opportunity for discussing blood issues, if this can be added in the terms of reference of these committees. Hospital set ups are such that laboratory personnel do not sit in the internal procurement committees of most hospitals. This means that laboratory technicians have limited opportunities to significantly influence the procurement and management of reagents and consumables in the hospital. It is encouraged that hospital transfusion committees be formed at each hospital. If it is felt that there are too many committees, hospitals are encouraged to incorporate blood issues in their drug committees. Furthermore, laboratory technicians must be involved in all procurement processes of laboratory reagents from budgeting, ordering, evaluation of suppliers and receipt of goods.

7.6 BLOOD COLLECTIONS

60 (69%) of hospitals routinely collected blood on their own in addition of being supplied by the MBTS. 2(2%) of hospitals never collected blood from the MBTS. 1 hospital indicated that the MBTS offices were too far and the other hospital was not yet approved by the MBTS to get blood from its laboratory. There were 27 (31%) hospitals which did not collect blood on their own. 15 (56%) were private hospitals and the remainder was shared between CHAM and Government hospitals.3 Central hospitals did not collect blood on their own except one. The hospitals collected an estimated total of 30,399 units of usable blood in 2015 of which 4039 (13%) were reported to be form voluntary non-remunerated blood donors. As such , 26,360 collections were from family replacement blood donors in 2015 .In 2007 , the hospitals collected 40493 units. a reduction by 10094 (25%) units . There is no record of paid blood donors (although it is known that there is usually a hidden form of paid blood donation wherever family replacement blood donation takes place). The MBTS supplied to all 87 hospitals 59527 blood units in 2015. This means that of the 89, 926 units of blood used in the country, 66% were from voluntary non-remunerated blood donors and collected in the quality assured manner by the MBTS. 4039 (4%) were reported to be from voluntary non-remunerated blood donors collected by 9 hospitals but not in quality assured manner. The MBTS contributed 59 527

(66%) of blood units transfused in 2015 which is a 27% increase from that of 2007 . In 2007 , the MBTS contributed 39 % of total units transfused.

Table of Blood Collections and Type of Blood Donors in 2015:

INSTITUITION	TYPE OF DONORS	NUMBER OF UNITS(%)
MBTS(supplied)	VNRBD	59527 (66%)
HOSPITALS	VNRBD	4039 (4%)
HOSPITALS	FRBD	26360 (30%)
		89,926.

Table : A summary of blood collections from the various types of blood donors in 2007.

Item	Number	Percentage (%)
Hospitals that collect some blood on their own	48	85
Hospitals that do not collect blood on their own	6	15
Usable blood collected from family replacement blood donors	39,190	56
Usable blood collected from voluntary non-remunerated blood donors	30,915	44
Usable blood collected by the MBTS	27,242	39
Usable blood collected from paid blood donors	0	0
Total number of blood units used in 2007	70,105	100

7.7 BLOOD USAGE AND DEMAND

Data for number of blood units requested from the wards and confirmed transfused in the wards was not complete. However , most hospitals indicated the number of units issued to the wards . The total number of blood units issued to wards was 90 792 , and 75 245 (83%) were confirmed to be transfused. The number of units requested from the wards was 52 992 , which was 58% less than the total number of units issued to the wards. The discrepancy could be due to the incomplete data capturing.

There were a total of 98, 840 cross-matches in these hospitals. 42148 (43%) of the cross-matches were for paediatric patients, 18900(19%) for maternity

patients and 37792 (38%) were for other wards. This shows that the demand for blood is high for paediatric and maternity patients. It should be noted that although blood units crossmatched to otherwards were 38% , these units were shared among surgical , Medical and Oncology wards.

Table : a Summary of hospitals blood unit cross-matches in 2015

Item	Number of cross-matches	Percentage (%)
Blood units cross-matches for paediatric patients	42,146	43%
Blood units cross-matches for maternity patients	18900	19%
Blood units cross-matches for other wards	37 792	38%
Total Cross-matches from the hospitals in 2015	98,840	100%

Table : a Summary of hospitals demand for blood in 2007

Item	Number of hospitals	Percentage (%)
Number of Hospitals with data	51	94
Hospitals without data	3	6
Blood demand for paediatric patients	38,390	55
Blood demand for maternity patients	7,678	11
Blood demand for maternity and paediatric patients	46,068	66
Blood demand for other wards	23,732	34
Total demand for these hospitals	69,800	100

8 BLOOD NEEDS FOR MALAWI

The WHO has three formulae on estimating Country bloods. The first one is estimating through analysis of previous blood usage, the other is estimating the needs using the number of acute beds and this well applied iin countries with modern hospitals where beds are were labelled. The third one is based on countries population. 2% of population in developed country and 1% of population in a developing country.

Method 1 may be the most practical approach to use in estimating blood requirements because it relies on actual figures rather than theoretical calculations. This is the method which was used in 2007 situation analysis. However ,although it is usually the most accurate method, it can sometimes give a misleading result. This is because is based on previous blood usage rather than previous blood requirements. Since there may not always have been sufficient supplies of blood available in comparison with the amount required , the estimate obtained by this method may be low (may be constrained by in adequate supply). In Malawi , it is practical to use the third method ,needformulae for estimating a country's blood needs tend to over-inflate blood needs. There are several of them. Some are based on acute hospitals beds and others on the country's population. Although easily quantifiable, it is accepted that blood demand tends to increase with increased supply. As such, requests for blood are not a good measure of needs for the Country.

The most suitable way of accurately estimating a Country's blood needs are to look at the actual blood usage, its appropriateness (so that over-usage is checked and deducted) and to take into consideration the unmet need. During the conduct of this study, figures on unmet needs were not available as data for the number of units requested and units confirmed transfused was incomplete. Furthermore , hospitals do not record cases where needed transfusions have failed to take place due to non-availability of blood.
However , to come up with an estimate of the unmet blood need ,the annual total number of blood units requested by the hospitals from the MBTS in 2015 was obtained from the MBTS data repository. The total request from hospitals in 2015 was 124,176 and blood units issued to wards in all transfusing hospital was 90 792 . Therefore , it could be argued that the estimated unmet blood needs for 2015 was 33384 blood units.

9 CONCLUSION

This post-baseline situational analysis has provided information that will be extremely useful for planning and for monitoring and evaluation of the strategies being implemented to achieve blood transfusion safety. The report has documented some successes.

Availability of National Blood policy document, Guidelines, and a system for passive collection of blood safety data through introduction of Crossmatch Registers, Blood Transfusion Register .

demonstrated that the biggest challenge facing blood safety in the Country is the low number of voluntary non-remunerated blood donations.

There is some slight in availability of crucial blood cold chain equipment (blood bank deep freezers; platelet agitators, minimum and maximum thermometers, blood bank fridges and back up power); use of inappropriate

cross-match techniques; lack of essential stationery for blood transfusion safety. There also still low staffing levels in the laboratory.

There is no improvement in the availability of legislation on blood transfusion and on blood transfusion reactions recording form.

Further challenges still exist in the areas of quality systems at hospital level. These include lack of a sustainable maintenance program for hospital equipment; weak systems for ensuring an uninterrupted supply chain for reagents and supplies; and Record keeping and data management in most hospitals still remains a key challenge.

10 RECOMMENDATIONS

Recommendations are being made to the Ministry of Health; Zone Health Supervisors; Hospital Management Teams and to the Malawi Blood Transfusion Service.

10.1 Recommendations to the Ministry of Health

The Government of Malawi, through the Ministry of Health must take pride in the progress made and consolidate the gains attained in order to ensure that these gains are benefiting all patients who need blood anywhere in the country. Nonetheless, there are areas requiring improvement. The following recommendations go to the Ministry of Health:

10.1.1 To continue in the direction taken at the beginning of this century to have a centralised blood service that is responsible for the provision of safe and adequate supplies of blood and blood products and promotion of the appropriate clinical use of blood and blood products.

10.1.2 To facilitate the enactment of a blood transfusion law.

10.2 Recommendations to the MBTS

10.2.1 To devise and implement strategies which increase the proportion of voluntary non-remunerated blood donation.

10.2.2 To work with hospitals to improve blood donor safety.

10.2.3 To continue promoting the formation of Hospital Transfusion Committees.

10.3 Recommendations to Hospital Management teams

10.3.1 To ensure that their hospital blood banks are connected to a back up power source.

10.3.2 To ensure that their laboratories and all pieces of equipment on their inventories are in a good state of repair.

10.3.3 To stop using IV fluids as normal saline for laboratory work

10.3.4 To ensure that IAT cross-match technique is used for all cross-matches.

10.3.5 To ensure that there are written SOPs for all areas of blood bank work.

10.3.6 To ensure the availability of compatibility labels in their hospitals.

10.3.7 To create an environment where laboratory personnel participate in all processes of procurement of laboratory reagents and supplies.

10.3.8 To ensure vaccination against hepatitis B for all staff workers who handle blood.

10.3.9 To ensure that Hospital Transfusion Committees have been formed in their hospitals.

10.4 Recommendations to Zone Supervisors

10.4.1 To take copies of the results of assessments made of hospitals in their zones and use them for supervision and monitoring of improvements.

10.4.2 To facilitate that CHAM hospitals in their zones are receiving supervisory visits from Zonal and EMLS regional supervisors.

References

1 World Health Organisation, Management of Blood Transfusion Services, 1990

2 World Health Organisation, Safe Blood and Blood Products, Module 1 Blood donation, 2003

3 Ministry of Health, To the Year 2020: A Vision for the Health Sector in Malawi, 1999

4 M'baya B et al: The Prevalence of Red Cell Antigens and Antibodies in the Malawi Population; Africa Sanguine Issue Vol11, no.2: December 2008

5 National Statistical Office, Malawi Demographic and Health Survey, 2000.

6 Candotti D et al Serological and molecular screening for viruses in blood donors from Ntcheu, Malawi: High Prevalence of HIV-1 subtype C and of markers of Hepatitis B and C. J Med Virol. 2001 65 (1)

7 M. Nyirenda et al: The Prevalence of HIV-1, Hepatitis B (HBV) and Hepatitis C (HCV) in patients at Queen Elizabeth Central Hospital, Malawi (unpublished data)

8 Federal Ministry of Health; Report of the baseline Data Survey on Blood Transfusion Practice in Nigeria, 2007

9 Patrick Sullivan, Developing an Administrative Plan for Transfusion Medicine-a Global perspective. 2005 Transfusion Volume 45

10 World Health Organisation, Aide-Memoir for National Blood Programs

11 The Public Health Act, Malawi Parliament, 1981, Zomba, Malawi

12 Ministry of Health, Recommended Guidelines for the Practice of Safe Blood Transfusion in Malawi, 1997

Annexes

Annex 1: List of Hospitals surveyed (To be updated)

Category A- Central Hospitals

No	Name of Hospital
001	Queen Elizabeth Central
002	Zomba Central
003	Kamuzu Central
004	Mzuzu Central

Category B- District and Mission Hospitals

No	Name of Hospital
001	Balaka District Hospital
002	Chikwawa District Hospital
003	Chiradzulu District Hospital

004	Mwanza District Hospital
005	Machinga District Hospital
006	Mulanje District Hospital
007	Nsanje District Hospital
008	Thyolo District Hospital
009	Mangochi District Hospital
010	Ntcheu District Hospital
011	Bwaila District Hospital
012	Salima District Hospital
013	Mchinji District Hospital
014	Kasungu District Hospital
015	Dowa District Hospital
016	Ntchisi District Hospital
017	Dedza District Hospital
018	Nkhota-Kota District Hospital
019	Chitipa District Hospital
020	Karonga District Hospital
021	Nkhata-Bay District Hospital
022	Mzimba District Hospital
023	Rumphi District Hospital
025	St. Montfort Mission Hospital
026	Malamulo Mission Hospital
027	Mulanje Mission Hospital
028	St. Joseph Mission Hospital
029	St. Lukes Mission Hospital
030	Holy Family Mission Hospital
031	Trinity Mission Hospital
032	Madisi Mission Hospital
033	Mtengowathenga Mission Hospital
034	Likuni Mission Hospital
035	Nkhoma Mission Hospital
036	St. Gabriel Mission Hospital
037	St. Annes Mission Hospital
038	Mua Mission Hospital
039	Ekwendeni Mission Hospital
040	St. John's Mission Hospital
041	Embangweni Mission Hospital
042	David Gordon Memorial Hospital

Category C- Community Hospitals (Government and CHAM)

No	Name of Hospital
001	Monkey – Bay Community
003	Mponela Rural
003	Chintheche Rural
004	Mulibwanji Mission
005	St. Martins Mission
006	Mlare Mission
007	Our Lady of Mt Carmel (Kapiri)

008	Alinafe Community Mission

ANNEX 2: SUMMARY OF MAJOR FINDINGS FOR EACH HOSPITAL (TO BE UPDATED)

N0.	Hospital Name	Comments
001	Queen Elizabeth Central Hospital	- Specific blood bank staff available - Adequate infrastructure - No Platelet agitator, no monitoring thermometers, other pieces of equipment available - Has no maximum and minimum thermometer - Blood bank not connected to the back up power supply - All reagents not expired - Does not make own normal saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - Have temperature monitoring forms, no stock cards - Blood units appropriately arranged in the blood bank - Did not run out of test reagents - Uses IAT cross match when issuing blood to patients, has cross match labels, - All blood for transfusion comes from MBTS - Laboratory, Blood Bank restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood bank participates in an EQAS program, has a functioning drug committee, has a functioning a Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Poor record keeping

002	Zomba Central Hospital	- Specific blood bank Personnel available - Adequate infrastructure - No blood bank deep freezer, no Platelet agitator, no monitoring thermometers, other pieces of equipment available. - Poor blood monitoring practices - Has no maximum and minimum thermometer - Blood bank connected to the back up power supply - Units of blood issued without cross matching, blood issued without proper documentation. - Blood grouping reagent not expired, expired AHG reagent - Does not make its own saline - No SOPs for all procedures - No cross match labels, have temperature monitoring forms, have stock cards - Laboratory not restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Blood bank not a restricted area, Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units poorly arranged in the blood bank - All donated blood is screened for HIV, Hepatitis B and Syphilis - Blood bank participates in an EQAS program, has a functioning drug committee, no Hospital Transfusion committee - Laboratory Technicians not involved in ordering of reagents. - Poor record keeping
003	Kamuzu Central Hospital	- Specific blood bank Personnel available - Adequate infrastructure - No Platelet agitator, no test tube racks, no monitoring thermometers, no weighing balance, other pieces of equipment available. - Has no maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagent not expired, no AHG reagents - Does not make its own normal saline

		- Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - Have cross match labels, have Stock cards, have no temperature monitoring forms - All blood for transfusion comes from MBTS - Laboratory /Blood bank is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hepatitis B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards - Blood bank participates in EQAS program, Laboratory staff not aware of the drug committee, has no functioning Hospital Transfusion committee - Laboratory Technicians are involved in ordering of reagents. - Poor record keeping
004	Mzuzu Central Hospital	- Specific blood bank Personnel available - Adequate infrastructure - No Platelet agitator, no bench top centrifuge, other pieces of equipment available. - Has no maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagent not expired, expired AHG reagents - Does not make its own normal saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs available for all procedures - Blood units appropriately arranged in the blood bank fridge - No cross match labels, have stock cards, have temperature monitoring forms - Laboratory/ Blood bank is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Uses Saline cross match when issuing blood to the wards - Donated blood is screened for HIV, Hepatitis B, Syphilis and Malaria

		- Blood bank participates in EQAS program, has a functioning drug committee, no Hospital transfusion committee - Laboratory Technicians are involved in ordering of reagents. - Good record keeping

005	Balaka District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, other hospital level necessary pieces of equipment available - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make its own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses saline crossmatch when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis and Syphilis - Did r un out of test reagents for 1- 3 months - Blood bank Does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Good record keeping

006	Chikwawa District Hospital	- No specific personnel working in blood bank - Blood bank too small - No blood bank deep freezer, no storage container for saline, other hospital level necessary pieces of equipment available. - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank not connected to the back up power supply - All reagents not expired - Does not make its own saline - Reagents prepared in the Laboratory are labelled with name and expiry date only - No SOPs are available for all procedures - No crossmatch labels, no stock cards, temperature monitoring forms available - Laboratory restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, has a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses Saline and IAT techniques, - Screens donated blood collected at the hospital for HIV, Hep B and Syphilis - Did not run out of test reagents - Participates in the EQAS program, has a functioning drug committee, no hospital transfusion committee - Laboratory Technicians are involved in ordering of reagents. - Good record keeping
007	Chiradzulu District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no monitoring thermometer, no weighing balance, other hospital level necessary pieces of equipment available - Adequate monitoring of blood storage conditions - Has a maximum and minimum thermometer

		- No SOPs for all procedures - Blood bank connected to the back up power supply - All reagents not expired - Does not make own saline, - Reagents prepared in the Laboratory labelled by name only - No cross match labels - Has stock cards and temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, staff are vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses Saline and IAT cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B, Hepatitis C and Syphilis - Did run out of test reagents for 1 – 3 months - Blood bank participates in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are not involved in ordering of reagents. - Good recording keeping

008	Mwanza District Hospital	- No specific personnel working in blood bank - Inadequate infrastructure - No blood bank deep freezer, other pieces of equipment available - Inadequate monitoring of blood storage conditions - No maximum and minimum thermometer - No SOPs for all procedures - Blood bank connected to the back up power supply - Blood grouping reagent not expired, expired AHG reagent - Does not make own saline, - Reagents prepared in the Laboratory labelled by name only

		- Has cross match labels, no stock cards, has temperature monitoring forms - Laboratory is not a restricted area, staff wear provided with protective clothing, staff are vaccinated against Hep B, has no system for PEP for HIV - Blood units are cramped together in the refrigerator, - Uses Saline cross match when issuing blood to the wards - All blood donated at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than one month in the year - Blood bank does not participate in EQAS program, has functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are not involved in ordering of reagents. - Poor record keeping
009	Machinga District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, other pieces of equipment available. - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, expired AHG reagents - Does not make own saline - Does not prepare reagents in the Laboratory - No SOPs for all procedures - No crossmatch labels, has stock cards, have temperature monitoring forms - Laboratory is not a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B , have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis

		- Did run out of test reagents for less than one month - Blood bank participates in an EQAS program, has a functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are not involved in ordering reagents. - Poor record keeping
010	Mulanje District Hospital	- No specific personnel working in blood bank - Adequate infrastructure - No blood bank deep freezer, other pieces of equipment available. - No minimum and maximum thermometer - The blood bank is connected to back up power supply - All reagents not expired - Does not make its own saline - Reagents prepared in the Laboratory is labelled with name only - No SOPs for all procedures - No cross match labels, has Stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing , cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses Saline and IAT cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out test reagents for less than one month - Blood bank participates in the EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Poor record keeping
011	Nsanje District Hospital	- No specific personnel working in blood bank - Blood bank too small

		- No blood bank deep freezer, no water bath, no monitoring thermometers, other hospital level necessary pieces of equipment available. - Not monitoring of blood storage conditions at all times - Has no maximum and minimum thermometer - Blood bank not connected to the back up generator - Blood grouping reagents not expired, expired AHG reagents - Reagents prepared in the Laboratory labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, no temperature monitoring forms - Laboratory is restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of stock reagents for less than one month - Blood bank does not participate in EQAS program, has a functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents. - Poor record keeping
012	Thyolo District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank refrigerator, no blood bank deep freezer, no container for storage saline, other hospital level necessary pieces of equipment available - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired

		- Does not make own saline - Reagents prepared in the Laboratory is labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, has temperature monitoring forms - Laboratory a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, have a system for PEP for HIV - All donated blood at the hospital is screened for HIV, Hepatitis B, Hepatitis C and Syphilis - Did not run out of test reagents - Blood bank participates in EQAS program, have no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Good record keeping
013	Mangochi District Hospital	- No specific personnel working in the blood bank - Blood bank too small, has no ventilation and poor lighting - No blood bank deep freezer, no water bath, no container for storage of normal saline, other hospital level necessary pieces of equipment available. - Adequate monitoring of blood storage conditions - Has a maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make its own saline - Reagents prepared in the Laboratory labelled with name only - No SOPs for all procedures - No cross match labels, have Stock cards, have temperature monitoring forms - Blood is issued without cross matching - Laboratory not restricted area, staff does not wear protective clothing, cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, have a system for PEP for HIV

		- Blood is cramped together in the refrigerator - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than a month - Blood bank does not participate in EQAS program, has a functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are not involved in ordering reagents from Central Medical Stores - Poor record keeping
014	Ntcheu District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, other hospital level necessary pieces of equipment available - Has no maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, no AGH reagent - Does not make own saline - Reagents prepared in the Laboratory labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners not provided with heavy duty gloves - Staff vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - Uses tile technique for blood grouping - Screen donated blood for HIV, Hep and Syphilis - Did run out of test reagents for less than one month - Blood bank does not participate in EQAS program, has no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Poor record keeping

015	Salima District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - Blood bank deep freezer available, other hospital level necessary pieces of equipment available - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, expired AHG reagents - No SOPs for all procedures - Has cross match labels, stock cards and temperature monitoring forms - Laboratory not restricted area, staff wear protective clothing, cleaners not provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units poorly arranged in the fridge - Uses saline cross match when issuing blood to the wards - Uses both Tile and Tube technique for blood grouping - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than one month - Blood bank does not participate in EQAS program, has a functioning drug committee, - has a functioning Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Poor record keeping
016	Mchinji District Hospital	- No specific personnel working in the blood bank - Poor ventilation - No blood bank deep freezer, other hospital level necessary pieces of equipment available - Poor blood monitoring practices - No maximum and minimum thermometer - Blood bank not connected to the back up power supply - Blood grouping reagent not expired, no AHG reagents

		- Does not make saline - Reagents prepared in the Laboratory is labelled with name and expiry date - No SOPs for all procedures - Has cross match labels and stock cards, no temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, have a system for PEP for HIV - Blood units poorly arranged in the fridge - Use saline cross match when issuing blood to the wards - Uses both Tile and Tube techniques for blood grouping - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than one month - Blood bank participates in EQAS program, has no functioning hospital drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of test reagents. - Good record keeping
017	Kasungu District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no container for storing normal saline, other hospiltal level necessary pieces of equipment available - No maximum and minimum thermometer - Blood bank not connected to the back up power supply - Blood grouping reagents not expired, expired AHG reagents - Does not make own saline - Reagents prepared in the Laboratory are labelled with name, expiry date and date prepared - Has no Pasteur pipettes, no test tubes (12 x 75 mm), no Wash bottles - No SOPs for all procedures - No cross match labels, have stock cards, have temperature monitoring forms

		- Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units stored is cramped together, not systematically separated - Uses saline cross match when issuing blood to the wards - All donated blood is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than one month - Blood bank does not participate in EQAS program, have a functioning drug committee, have a functioning Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents from Medical Stores - Good record keeping
018	Dowa District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no container for storage of normal saline, water bath is available but not working, other pieces of equipment available - Inadequate monitoring of blood storage conditions - No maximum and minimum thermometer - Blood bank connected to the back up power supply - All blood grouping and AGH reagents expired - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only - No Pasteur pipettes, no wash bottles - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing and cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, have a system for PEP for HIV - Blood units poorly arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards

		- Blood donated at the hospital is screened for HIV, Hep B and Syphilis - Did run out of test reagents for less than one month - Blood bank participates in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents. - Poor record keeping
019	Ntchisi District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no test tube racks, no monitoring thermometers, other necessary hospital level pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, no AGH reagents - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only - No Wash bottles - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing and cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hep B and Syphilis - Did not run out of test reagents - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents

		- Good record keeping
020	Dedza District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, other pieces of equipment available - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - Only Anti- A and Anti- B grouping sera available, all other blood grouping and AHG reagents not available - Does not make own saline - Uses A,B,& O reagents cells for grouping - Reagents prepared in the Laboratory are labelled with name, date of preparation, who prepared it and expiry date - Uses mineral water since they can not access distilled/ de-ionized water - All SOPs are available except for the ABO & RhD grouping - No cross match labels, has stock cards and temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards - All donated blood is screened for HIV, Hepatitis and Syphilis - Did run out test reagents for less than one month - Participates in EQAS program, have functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents - Good record keeping
021	Nkhota kota District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - blood bank deep freezer available, all other hospital level necessary pieces of equipment available

		- adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - blood bank connected to the back up power supply - blood grouping reagents not expired, AGH reagents not available - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out test reagents for 1- 3 months - Blood bank does not participate in EQAS program, has a functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents - Good record keeping

022	Chitipa District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, water bath available but not working, no container for storing normal saline, other hospital level necessary pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents for grouping were expired, no AHG reagents - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only

		- Have no Pasteur pipettes - No SOPs for all procedures - No cross match labels, have stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B, Syphilis and Malaria - Did run out of test reagents for 1- 3 months - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents - Poor record keeping

023	Karonga District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, other hospital level necessary pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, expired AHG reagents - Does not make own saline - Reagents are not prepared in the Laboratory - No SOPs for all procedures - No cross match labels, have stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV

		- Blood units appropriately arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards - Uses Tile method for blood grouping - Does forward blood to other hospitals - All donated blood at the hospital is screened for HIV, Hepatitis B, Hepatitis C and Syphilis - Did not run out of test reagents - Blood bank does not participate in EQAS program, has no functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents from Medical Stores - Poor record keeping

024	Nkhata- Bay District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, other pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, expired AHG reagents - Does not make own saline - Reagents prepared in the Laboratory is labelled with name only - No SOPs for all procedures - No cross match labels, have stock cards, have temperature monitoring forms - Laboratory is not restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - Blood donated at the hospital is screened using rapid test kits - All donated blood is screened for HIV, Hepatitis B and Syphilis

		- Did run out of test reagents for less than one month - Blood bank does not participate in EQAS program, no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering reagents - Poor record keeping

025	Mzimba District Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no container for storing normal saline, other hospital level necessary pieces of equipment available - Adequate monitoring of blood storage conditions - Have maximum and minimum thermometer - Blood bank not connected to the back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory is labelled with name and date of preparation - Uses washed EDTA tubes for cross match - No SOPs for all procedures - No cross match labels, have stock cards , have temperature monitoring forms - Laboratory is not restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - All donated blood is screened for HIV, Hepatitis B, Syphilis and Malaria - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering reagents

		- Poor record keeping
026	Rumphi District Hospital	- No specific personnel working in the blood bank - Inadequate infrastructure, small blood bank, poor ventilation - No blood bank deep freezer, water bath is available but not working, no blood cold chain box, no container for storage of normal saline, no weighing balance, other necessary hospital level pieces of equipment available - Has no maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory is labelled with name only - Has no Wash bottles - No SOPs for all the procedures - No cross match labels, have stock cards , have temperature monitoring forms - Laboratory not restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, no system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than one month - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are not involved in ordering reagents - Good record keeping

027	Mlambe Mission	- No specific personnel working in blood bank - Adequate infrastructure

	Hospital	- No blood bank freezer, no monitoring thermometers, no bench top centrifuge, other hospital level necessary pieces of equipment available. - Has no maximum and minimum thermometer - Blood bank is connected to the back up power supply - Blood grouping reagents not expired, expired cross match reagents - No SOPs for all procedures - Makes own saline - Reagents prepared in the Laboratory is labelled with name only - No cross match labels, no stock cards, no temperature monitoring forms - Laboratory is restricted area, staff are provided with protective clothing, cleaners are not provided with heavy duty gloves - Staff not vaccinated against Hep B, No system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - Blood bank participates in EQAS program, no functioning drug committee, no Hospital Transfusion Committee Laboratory - Laboratory Technicians not involved in ordering reagents - Poor record keeping
028	St. Montfort Mission	- No specific personnel working in blood bank - Adequate infrastructure - No blood bank deep freezer, no container for storing Normal Saline, no monitoring thermometers, other pieces of equipment available. - Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank is connected to back up power supply - Blood grouping reagents not expired, expired cross match reagents - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only

		- No SOPs for all procedures - No cross match labels, has stock cards and temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, heavy duty gloves are provided to cleaners - Staff are not vaccinated against Hep B , have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses Saline and IAT cross match when issuing blood to the wards - Uses both Tile and tube technique for blood grouping - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out reagents for less than one month - Blood bank participates in EQAS program, has functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering reagents from Central Medical Stores - Poor record keeping
029	Malamulo Mission Hospital	- Specific blood bank personnel available - Adequate infrastructure - No blood bank refrigerator, no blood bank deep freezer, no weighing balance, other hospital level necessary pieces of equipment available. - Inadequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Makes own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - Has cross match labels, stocks cards, have temperature monitoring forms - Blood bank not restricted area, staff not wearing protective clothing, cleaners not provided with heavy duty gloves, - Staff not vaccinated against Hep B, have a system for PEP for HIV

		- Blood units appropriately arranged in the fridge - Uses IAT cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did not run out of test reagents - Blood bank participates in EQAS program, has a functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering reagents - Good record keeping
030	Mulanje Mission Hospital	- No specific personnel working in blood bank - Adequate infrastructure - No blood bank deep freezer, no monitoring thermometers, other pieces of equipment available. - Has no maximum and minimum thermometer - Blood bank is connected to the back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory labelled with name only - No cross match labels, has stock cards, have temperature monitoring forms - Laboratory restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, has system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - No SOPs for all procedures - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did not run out of test reagents - Blood bank participates in EQAS program, has functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering reagents - Poor record keeping

031	St. Joseph Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no monitoring thermometer, no weighing balance, other pieces of equipment available - Not monitoring blood storage condition all the time - No maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory labelled with name only - No SOPs for all procedures - No cross match labels, has stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners not provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - All donated blood is screened for HIV, Hepatitis B and Syphilis - Did not run out of test reagents - Blood bank participates in EQAS program, has functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are not involved in ordering reagents - Poor record keeping
032	St. Luke's Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no container for storage of saline, other necessary hospital level pieces of equipment available. - No maximum and minimum thermometer - Blood bank not connected to the back up power supply

		- Blood grouping reagents not expired, expired AHG reagents - Does not make own saline - Reagents prepared in the Laboratory labelled with name only - No SOPs for all procedures - No cross match labels, has no stock cards, have temperature monitoring forms - Laboratory not a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Blood units are cramped together in the fridge. - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did run out of reagents for less than one month - Blood bank does not participate in any EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering reagents. - Good record keeping
033	Holy Family Mission Hospital	- No specific personnel working in the blood bank - Blood bank space too small - No blood bank deep freezer, no water bath, other hospital level pieces of equipment available. - Not monitoring blood storage condition all the time - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory labelled with name only - No SOPs for all procedures - Has cross match labels, stock cards and temperature monitoring forms - Laboratory restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, has system for PEP for HIV - Blood units appropriately arranged in the fridge

		- Uses Saline and IAT cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did not run out of test reagents - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents - Poor record keeping
034	Trinity Mission Hospital	- No specific personnel working in blood bank - Adequate infrastructure - No blood bank deep freezer, no monitoring thermometers, other necessary hospital level pieces of equipment available. - Has no maximum and minimum thermometer - Blood bank connected to a back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - No cross match labels, have temperature monitoring forms and stock cards - Laboratory is a restricted area, staff wear protective clothing, Cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have A system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses IAT cross match when issuing blood to the wards - Uses Tile technique for blood grouping - Did not run out of test reagents - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Blood bank does not participate in EAQS program, has functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents

		- Good record keeping

035	Madisi Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank refrigerator, no blood bank deep freezer, other pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply but not working - All reagents not expired - Does not make saline - Reagents prepared in the Laboratory are labelled with name and date prepared - Has no Pasteur pipettes, no test tubes(12 x 75 mm), no Wash bottles - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory not a restricted area, staff wear protective clothing and cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units cramped together inside the fridge - Uses saline cross match when issuing blood to the wards - Uses Tile technique for blood grouping - All donated blood at the hospital is screened for HIV, Hepatitis B, Syphilis and Malaria - Blood bank does not participate in EQAS program, has no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Poor record keeping
037	Mtengowanthenga Mission Hospital	- No specific personnel working in the blood bank - Blood bank too small - No blood bank deep freezer, no weighing balance, other pieces of equipment available - Not monitoring blood storage condition all the time

		- No maximum and minimum thermometer - Blood bank connected to the back up power supply - The grouping sera and AGH reagents all expired - Makes own saline - Reagents prepared in the Laboratory is labelled with name only - No SOPs for all procedures - No separate register for cross match and issue of blood but it is combined with blood donors - No cross match labels, stock cards and temperature monitoring forms - Laboratory is not restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have no system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital screened for HIV, Hep B and Syphilis - Did run out OF test reagents for less than one month - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Poor record keeping
038	Likuni Mission Hospital	- No specific personnel working in the blood bank - No specific area within the Laboratory for blood bank activities - No blood bank refrigerator, no blood bank deep freezer, no weighing balance, other hospital level pieces of equipment available - Not monitoring blood storage conditions all the time - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, AHG reagent expired - Does not make own saline

		- Reagents prepared in the Laboratory is labelled with name only - No SOPs for all procedures - No cross match labels, stock cards and temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, have no system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses Saline and IAT technique cross match when issuing blood to the wards - Uses both Tile and Tube technique for blood grouping - All donated blood at the hospital is for HIV, Hepatitis B and Syphilis - Did run out of test reagents for less than one month - Blood bank participates in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents. - Good record keeping
039	Nkhoma Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no water bath, other hospital level necessary pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagent not expired, AHG reagent expired - Makes own saline - Reagents prepared in the Laboratory are labelled with name only - Have no Pasteur pipette and wash bottles - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves

		- Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - Uses tile technique for blood grouping - All donated blood at the hospital is screened using rapid test kits - All donated blood is screened for HIV, Hepatitis B and Syphilis - Did run out of test reagents for 1- 3 months - Blood bank participates in EQAS program, have functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians involved in ordering of reagents from Central Medical Stores - Good record keeping
040	St. Gabriel Mission Hospital	- No specific personnel working in the blood bank - Adequate space, though no sink with running water - No blood bank deep freezer, no weighing balance, other hospital level necessary pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Makes own saline - All reagents not expired - Reagents prepared in the Laboratory is labelled with name only - No SOPs for all procedures - No cross match labels, No stock cards, have temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units is cramped together inside the fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis

		- Did run out of test reagents for less than one month - Blood bank participates in EQAS program, have no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians involved in ordering of reagents - Poor record keeping
041	St. Anne's Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank refrigerator, no blood bank deep freezer, water bath available but not working, no container for storage of normal saline, other pieces of equipment available - No maximum and minimum thermometer - Blood bank not connected to the back up power supply - All reagents not expired, no AHG reagent - Does not makes own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory restricted area, staff wear protective clothing, cleaners not provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the blood bank fridge - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Did not run out of test reagents - Blood bank does not participate in EQAS program, has no drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Poor record keeping -

042	Mua Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, water bath available but not working, other hospital level necessary pieces of equipment available - Not monitoring blood storage condition all the time - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, no AGH reagents - Makes own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - No cross match labels, no stock cards, no temperature monitoring forms - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses saline cross match when issuing blood to the wards - Uses tile technique for blood grouping - All donated blood at the hospital is screened for HIV, Hep B and Syphilis - Blood bank does not participates in any EQAS program, has no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents - Good record keeping
043	Ekwendeni Mission Hospital	- No specific personnel working in the blood bank - Blood bank too small - No blood bank refrigerator, no blood bank deep freezer, no water bath, no blood cold chain box, no container for storing normal saline

		- Adequate monitoring of blood storage conditions - Has maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, no AHG reagents - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - Have no cross match labels, have temperature monitoring forms and stock cards - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, have a system for PEP for HIV - Blood units are cramped together in the refrigerator - Uses saline cross match when issuing blood - All donated blood at the hospital is screened for HIV, Hepatitis B, Syphilis and Malaria - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering of reagents - Poor record keeping

044	St. John's Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no blood cold chain boxes, no container for storage of normal saline, no monitoring thermometers, other pieces of equipment available - Adequate monitoring of blood storage conditions - Blood bank connected to the back up power supply - Blood grouping reagents not expired, no AHG reagents - Does not make own saline

		- Reagents prepared in the Laboratory are labelled with name only - Does not have wash bottles - No SOPs for all the procedures - No cross match labels, no stock cards, have temperature monitoring forms - The Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units are cramped together in refrigerator - Uses saline cross match when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B and Syphilis - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Poor record keeping
045	Embangweni Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank refrigerator, no blood bank deep freezer, no water bath, no blood cold chain box, no test tube racks, no monitoring thermometers, other pieces of equipment available - Not monitoring of blood storage condition all the time - No maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make its own saline - Reagents prepared in the Laboratory is labelled with name, expiry date and preparation date - No SOPs for all the procedures - No Hospital blood request forms- uses patients files, no MBTS blood and blood products ordering forms, no cross match labels, no stock cards, no temperature monitoring forms - Laboratory is not restricted area, staff wear protective clothing, cleaners are provided with heavy duty

		gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units are cramped together when stored in the refrigerator - Uses saline cross match when issuing blood to the wards - All donated blood is tested for HIV, Hepatitis B and Syphilis - Blood bank does not participate in EQAS program, no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Good record keeping
046	David Gordon Memorial Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no water bath, no blood cold chain box, other pieces of equipment available - Not monitoring blood storage condition all the time - No maximum and minimum thermometer - Blood bank not connected to the back up power supply - All reagents expired - Makes own saline - Reagents prepared in the Laboratory are labelled with name only - No SOPs for all procedures - Has no MBTS blood and blood products ordering forms - Has no cross match labels, temperature monitoring forms, stock cards - Laboratory is a restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, have a system for PEP for HIV - Blood units appropriately arranged in the fridge - Uses Saline and IAT technique when issuing blood to the wards - All donated blood at the hospital is screened for HIV, Hepatitis B, Syphilis and Malaria - Did run out of test reagents for more than three months - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital

		Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Good record keeping
047	Monkey Bay Government community Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank refrigerator, no blood bank deep freezer, no water bath, no cold chain box, no monitoring thermometer, no container for storage of saline, other hospital level necessary pieces of equipment available - Adequate monitoring of blood storage conditions - No maximum and minimum thermometers - Blood bank connected to the back up power supply - Blood grouping reagents not expired, has no AHG reagent - Make own saline - Reagents prepared in the Laboratory are labelled by name only - Have no access to distilled/ de-ionized water, no wash bottles - No SOPs for all procedures - No MBTS blood and blood products ordering forms, no cross match labels, has stock cards and temperature monitoring forms - Laboratory not restricted area, laboratory staff does not wear protective clothing, cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, have a system for PEP for HIV - Blood units are cramped together in the fridge - Uses saline cross match when issuing blood to the wards, - All donated blood is screened for HIV, Hepatitis B and Syphilis - Has never collected blood from MBTS - Did run out of test reagents for 1- 3 months - Blood bank participates in EQAS program, no functioning drug committee, no Hospital Transfusion Committee

		- Laboratory Technician not involved in ordering reagents - Good record keeping
048	Mponela Rural Hospital	- No specific personnel working in the blood bank - Blood bank too small, no specific area designated for blood bank activities and has no working bench - No blood bank refrigerator, no blood bank deep freezer, no bench top centrifuge, no water bath, no container for storage of normal saline, no weighing balance, other pieces of equipment available - No maximum and minimum thermometer - Blood bank not connected to the back up power supply - Expired blood group reagents, no AGH reagent - Does not make own saline - No wash bottles - No SOPs for all procedures - No cross match labels, no stock cards and have temperature monitoring forms - Laboratory not restricted area, staff wear protective clothing and cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B, have no system for PEP for HIV - Blood units arranged appropriately in the fridge. - Uses saline technique as method for routine and emergency cross match - All donated blood is tested for HIV, Hepatitis B and Syphilis - Had run out for test reagents for less than one month - Blood bank does not participate in EQAS program, Laboratory not a restricted area, no drug committee, no Hospital Transfusion Committee - Laboratory Technician not involved in ordering reagents - Poor record keeping
049	Chintheche Rural Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no water bath, no blood cold chain box, no monitoring thermometers, no weighing balance, other pieces of equipment available

		- Not monitoring blood storage condition all the time - Has no maximum and minimum thermometer - Blood bank not connected to the back up power supply - Blood grouping reagents not expired, has no AHG reagents - Does not make own saline - All reagents not expired - No SOPs for all procedures - Has no cross match labels - Has no stock cards, has no temperature monitoring forms - Laboratory not restricted area, staff do not wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units are arranged appropriately in the fridge - Uses saline cross match and tile for blood grouping - Did run out of test reagents for less than one month - Blood is screened for HIV, Hepatitis B and Syphilis - Blood bank does not participates in EQAS program, has no drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering reagents - Poor record keeping
050	Mulibwanji Community Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no water bath, no monitoring thermometers, no container for storage saline, other pieces of equipment available. - Has no maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, has no AHG reagents - Does not make own saline

		- Does not prepare reagents in the Laboratory - Has no test tubes and wash bottles - No SOPs for all procedures - Has no cross match labels - Has no stock cards, has temperature monitoring forms - Laboratory not restricted area, staff do not wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units are arranged appropriately in the blood bank - Uses saline cross match and tile for blood grouping - All donated blood is screened for - Did not run out of test reagents - Does not participates in EQAS program, has no drug committee, no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering reagents - Poor record keeping
051	St. Martins Community Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no water bath, no monitoring thermometers, no container for storage of saline, other pieces of equipment available. - Not monitoring blood storage conditions all the time - Has no maximum and minimum thermometers - Blood bank not connected to the back up power supply - Blood group reagents not expired, AHG reagent not available - Does not make own saline - Does not prepare reagents in the Laboratory - Have no access to distilled/de-ionized water, no Pasteur pipettes and wash bottles - No SOPs for all procedures - No MBTS blood and blood products ordering forms

		- No cross match labels - Has stock cards and temperature monitoring forms - Laboratory is not restricted area, staff are do not wear protective clothing, - cleaners are provided with heavy duty gloves - Staff are not vaccinated against Hep B, No system for PEP for HIV - Blood units poorly arranged in the fridge. - Does not perform cross matches - Blood collected at the hospital is screened using rapid test kits - Did run out test reagents for more than three months - Does not participate in EQAS program, has a functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians involved in ordering of reagents - Poor record keeping
053	Mlare Mission Community Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no bench top centrifuge, no weighing balance, water bath available but not working, other pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - All reagents not expired - Does not make own saline - Reagents prepared in the Laboratory is labelled with name only - SOPs are available for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B and no system for PEP for HIV - Blood units are cramped together - Uses IAT and Saline techniques for routine and emergency cross match

		- Uses Tube technique for blood grouping - All donated blood is screened using rapid test kits - Did not run out of test reagents - Blood bank participates in EQAS program, no functioning drug committee, no Hospital Transfusion Committee - Laboratory Technicians not involved in ordering of reagents - Good record keeping
053	Our Lady of Mt Carmel Community Mission Hospital	- No specific personnel working in the blood bank - Blood bank too small - No blood bank refrigerator, no blood bank deep freezer, water bath available but not working, no container for storage of saline, no weighing balance, other hospital level necessary pieces of equipment available - Not monitoring blood storage condition all the time - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, expired AHG reagents - Does not make own saline - Reagents prepared in the Laboratory are labelled with name only - Blood bank has no Pasteur pipettes and wash bottles - No SOPs for all procedures - No cross match labels, no stock cards, no temperature monitoring forms - Laboratory restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff are vaccinated against Hep B and have a system for PEP for HIV - Blood units are cramped together - Uses saline technique for cross match - Uses Tile technique for blood grouping - All donated blood is screened using rapid test kits - Run out of test reagents for less than one month - Blood bank participates in EQAS program, no functioning drug committee, no Hospital Transfusion

		Committee - Laboratory Technicians not involved in ordering of reagents - Poor record keeping

054	Alinafe Community Mission Hospital	- No specific personnel working in the blood bank - Adequate infrastructure - No blood bank deep freezer, no water bath, no container for storage of normal saline, other pieces of equipment available - No maximum and minimum thermometer - Blood bank connected to the back up power supply - Blood grouping reagents not expired, no AHG reagents - Does not make own saline - Reagents prepared in the Laboratory is labelled with name only - Have no Pasteur pipettes and Wash bottles - No SOPs for all procedures - No cross match labels, no stock cards, have temperature monitoring forms - Laboratory not restricted area, staff wear protective clothing, cleaners are provided with heavy duty gloves - Staff not vaccinated against Hep B, have a system for PEP for HIV - Blood units arranged appropriately in the blood bank - Uses saline technique for cross match - All donated blood is screened for HIV, Hepatitis B, Syphilis and Malaria - Blood bank does not participate in EQAS program, has a functioning drug committee, has no Hospital Transfusion Committee - Laboratory Technicians are involved in ordering reagents - Poor record keeping

ANNEX 3: THE DATA COLLECTION TOOL (TO BE UPDATED)

HOSPITAL BLOOD BANK BLOOD SAFETY QUESTIONNAIRE

Hospital		**Bed Capacity**	
Contact Address & Telephone(s)			
Blood Bank Head		**Contact Telephone**	
Cadre of staff working in Blood Bank			

NO	TASK	KEY: YES: 1 NO: 2
1	**Infrastructure**	
	.• Space - 3m x 3m	
	.• Ventilation	
	.• Lighting	

.• Working bench

.• Sink with running water

2 **Equipment**

key: 1= blood bank fridge; 2= House hold fridge

What type of refrigerator do you have for storage of blood?

Does the blood bank have the following

[KEY: 1=YES and working/in use; 2 Yes but not working/in use; 3= Not working]

.• ≤ 25ºc Deep freezer

.• >25ºc Deep freezer	
.• Water bath	
.• Platelet Agitator	
.• Microscope	
.• Test tube racks	
.• Thermometers	
.• Containers for storing Normal saline	
.• Bench top centrifuge	
.• Weighing balance	
.• Blood Cold chain boxes	

NO	TASK	
3	**Temperature Monitoring for blood products in fridges and freezers**	**[1-seen; 2 not seen]**
	.• Temperature checked and recorded twice per day	
	.• Temperature checked and recorded once per day	

.• Graph paper used and checked once a week

.• Evidence of temperature monitoring

4 **Power supply [1- Available& working; 2- Available not working; 3- Not Available]**

.• Back up generator available

5 **Reagents**

Are the following reagents available? (**1- not expired; 2 expired; 3 Not available**)

.• Grouping sera [Anti-A, B, AB and D]

.• Anti Human globulin [Coombs reagent]

.• Normal Saline

NO	TASK	
5	**Reagents**	
		Key: YES: 1; NO: 2
	Do you use A cells, B cells and O cells reagents in your blood bank? (if 'Yes' verify)	

Are all the reagents properly labeled? i.e. name, expiry date, storage temp, lot no.

Key : 1= Name only ; 2= Name, expiry date
3= Name, expiry date & storage temperature

4=Name, expiry date, storage temperature, Lot No.
5 = Other (specify)

6 **Consumables** **Key: YES: 1; NO: 2**

Do you have access to distilled/de-ionized water?

Do you have the following

.• Pasteur pipettes

.• Test tubes [75x12mm

.• Wash bottles

.• Glass slides

7 **Procedures**

Do you have Standard Operating Procedures[SOP] for: [**1- Yes & seen; 2- Yes & not seen; 3- N0, everyone does their way]**

.• ABO and Rh D grouping

.• Cross matching

.•Direct and Indirect Anti Human globulin test[Coombs test]

.• Confirming Rh D negative(Du' testing)

.• Preparation of saline- 0.85%

.• Preparation of sensitized cells

.• Investigating of transfusion reactions

.• Issuing of blood and blood products

8 **Compatibility Testing**

Do you have the following documents [**Key: YES:1; NO; 2]**

.• Blood request forms; (if yes get a copy)

.• Register for cross-match and issue of blood; (if yes get a copy of a page)

.• MBTS Blood and blood products ordering forms

.• Compatibility labels , (if yes get a copy).

.• Transfusion reaction investigation form

.• Temperature monitoring forms
.• Stock Cards

9 **Safety**

Is there an SOP for handling spills, cleaning and decontaminating working surfaces? (if no provide details)

Is the Laboratory / blood bank restricted area?

Do staff wear protective clothing such as gloves, Laboratory coats & heavy duty gloves for cleaners?

Are staff vaccinated against Hepatitis B
Is there a system for PEP for HIV?

10 **Storage, Ordering and Issuing** **[Key: YES: 1; NO: 2]**

Storage

Check arrangement of blood packs in refrigerator

.• Blood bank refrigerator
- In cubicles and not touching each other
• Systematically separated according to:
- blood groups,

- expiry dates

- crossmatch status

- cramped together

.• House Hold refrigerator

- In rows and not touching each other

• Systematically separated according to:

- blood groups

- expiry dates

- crossmatch status

- Cramped together

• Packs kept at the back of fridge door

• Packs kept in middle of the fridge

• Packs kept in front of fridge door

Ordering **[Key: YES: 1;NO: 2]**

Is there Hospital blood ordering forms for blood request?

(if Yes' get a copy of the form).

Issuing

Method (Technique) of Crossmatch used

.• Routine uses Indirect Anti Human Globulin Test (IAT)

.• Routine uses Saline

.• Routine uses Enzyme

.• Routine uses Albumin

.• Other (Specify)

Emergency crossmatch

.• Uses IAT

. • Uses Saline

.• Uses Albumin

.• Other (Specify)

Method (Technique) of ABO & RhD grouping used

.• Tile or Slide

.• Tube

Do you forward some of the blood in your bank to other hospitals?

11 What is the blood requirement for a month?

12 What is the minimum acceptable stock level in your blood bank?

13 How many days does your minimum stock take you?

14	when you bleed blood donors on your own:	
a	Do you use any blood donor questionnaire? (If " yes" get a copy)	
b	Are the following checked before phlebotomy:	
	- Blood Pressure	
	- Pulse Rate	
	- Haemoglobin	
	- Weight	
c	Who carries out measurements	
	- Laboratory Technician	
	- Nurse	
	- Clinical Officer	
	- Medical Officer	
	- Other (Specify)	
d	When is TTI Screening carried out	
	- before Phlebotomy	
	- After phlebotomy	

14		
e	Are results disclosed to donors and by who?	
	- Laboratory Technician	
	- Counsellor	
	- Results not disclosed	
	- other (Specify)	

f Is there any intra and post donation care

- Refreshments provided
- Refreshments not provided
- Other (Specify)

g Are blood donor records maintained at the hospital?

h Is a Clinical person available to manage any untoward effects of blood donation when they occur

i Are mobile blood donation clinics carried out?

j What is the composition of a typical team
(state them here……..
…….

15 Blood Testing for infectious agents. (Tick the tests performed on blood for transfusion)

.1 = Rapid test kits
.2 = Antibody EIA
.3 = Ag/Ab EIA
.4 = Other (specify)

A - HIV

B - Hepatitis B

C- Hepatitis C

D- Syphilis

E - Malaria

16 Check the current stock levels for these test reagents.(1: in stock) (2: out of stock)

A - HIV

B - Hepatitis B

C- Hepatitis C

D- Syphilis

E - Malaria

17 Did you have any stock out of test reagents in the past 12 months?
[1= for less than 1 month; 2= for 1-3 months; 3= for more than 3 months]

18	State the minimum testing of infectious agents you carry out before transfusing blood 1= HIV, Hepatitis B, Syphilis 2= HIV, Hepatitis B, Syphilis, Malaria 3= HIV, Hepatitis B, Malaria, Hepatitis C, Syphilis 4 = Other, please specify in the space provided …… …….	
19	Does your Blood Bank participate in any EQAS program? (Specify)	
20	Do Hospitals have functioning drug committees? (If 'Yes' check minutes of last meeting)	
21	Do hospitals have functioning Hospital Transfusion Committees? (if 'Yes' check minutes)	
22	Are Laboratory Technicians involved in ordering of reagents from Medical Stores?	

RECORD THE FOLLOWING INFORMATION BY INPECTING BLOOD BANK REGISTER (1)

	MONTHS – 2007

TASK	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct.	Nov.	Dec.
Number of units collected from MBTS												
Number of units collected by the Hospital from: • Voluntary donors												
• Family replacement donors • Other (Specify)												
Number of units requested from ward												
Number of cross-matches performed												
Number of units cross matched to Pediatric /Children's ward												
Number of units cross matched to Maternity ward												

RECORD THE FOLLOWING INFORMATION BY INSPECTING BLOOD BANK REGISTER (2)

	MONTHS – 2007

TASK	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct.	Nov.	Dec.
Number of units Cross matched to other wards												
Total number of units issued to the wards												
Total number of confirmed transfusions												
Number of units expired												
Number of units reallocated												
Number of units which could not be used due to other reasons												

RECORD THE FOLLOWING INFORMATION BY INSPECTING BLOOD BANK REGISTER (3)

TASK	MONTHS – 2007											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct.	Nov.	Dec.
Check in the reagent stock register/stock cards to see if there was any stock outs for the following reagent in 2007:												
(A) Anti-sera (A, B, AB & D)												
(B) Anti Human Globulin												
(C) HIV reagents												
(D) Hepatitis B												
(E) Syphilis												
(F) Hepatitis C												
(G) Malaria Screening reagents												

16 of 16*The end.*